



SEQUENCE LISTING

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McWhirter, John
Maruyama, Toshiaki

2 E

<120> NESTED OLIGONUCLEOTIDES CONTAINING A HAIRPIN FOR NUCLEIC ACID
AMPLIFICATION

<130> 1087-35 DIV

<140> US 10/628,109

<141> 2003-07-28

<150> US 60/254,669

<151> 2000-12-11

<150> US 60/323,400

<151> 2001-09-19

<150> US 10/014,012

<151> 2001-12-10

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<170> PatentIn version 3.2

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Cys Ala Ala Ser Gly Phe Ile Phe Asp Asp Phe Ala Met His Trp Leu
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Arg Gln Val Pro Gly Lys Gly Leu Gln Trp Val Gly Leu Met Ser Trp
 35 40 45

Asp Gly Val Ser Ala Tyr Tyr Ala Asp Ser Val Glu Gly Arg Phe Thr
 50 55 60

Ile Ser Arg Asp Asn Lys Lys Asn Ala Leu Tyr Leu Gln Met Asn Ser
 65 70 75 80

Leu Gly Val Glu Asp Thr Ala Leu Tyr Tyr Cys Ala Lys Asp Met Gly
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Gly Gly Leu Arg Phe Pro His Phe Trp Gly Gln Gly Thr Pro Val Thr
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Val Ser Ala
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Leu Glu Phe Val Ala Val Ser Ser Gly Asn Gly Phe Ser Thr Tyr Tyr
35 40 45

Gly Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys
50 55 60

Asn Met Val Tyr Leu Gln Met Asp Ser Leu Arg Ala Glu Asp Thr Ala
65 70 75 80

Lys Tyr His Cys Ala Lys Val Arg Tyr Gly Pro Arg Ser His Phe Phe
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Phe Asp Pro Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
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Leu Glu Phe Val Ala Val Ser Ser Gly Asn Gly Phe Ser Thr Tyr Tyr
35 40 45

Gly Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys
50 55 60

Asn Met Val Tyr Leu Gln Met Asp Ser Leu Arg Ala Glu Asp Thr Ala

<400> 213

Glu Ser Asp Pro Gly Leu Val Lys Pro Ser Glu Thr Pro Ser Leu Thr
1 5 10 15

Cys Thr Val Ser Gly Gly Ser Ile Ser Ser Thr Met Tyr Phe Trp Gly
20 25 30

Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Ile Ala Ser Ile
35 40 45

Tyr Tyr Ser Gly Thr Thr Tyr Tyr Asn Pro Ser Leu Arg Ser Arg Val
50 55 60

Thr Met Ser Val Asp Thr Ser Lys Asn Gln Leu Ser Leu Lys Leu Asn
65 70 75 80

Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala Arg Pro Thr
85 90 95

Ile Tyr Tyr Phe Asp Gly Arg Thr Ser Tyr Tyr Pro Gly Glu Ala Ala
100 105 110

Phe Asp Ile Trp Gly Gln Gly Thr Thr Val
115 120

<210> 214

<211> 121

<212> PRT

<213> artificial sequence

<220>

<223> cloned antibody

<400> 214

Pro Gly Leu Val Lys Pro Ser Glu Thr Leu Ser Leu Thr Cys Thr Val
1 5 10 15

Ser Gly Gly Ser Ile Ser Asn Ile Met Tyr Phe Trp Gly Trp Ile Arg
20 25 30

Gln Pro Pro Gly Lys Gly Leu Glu Trp Ile Ala Ser Ile Tyr Tyr Ser
35 40 45

Gly Thr Thr Tyr Tyr Asn Pro Ser Leu Arg Ser Arg Val Thr Met Ser

| | | |
|---|-----|---------|
| 50 | 55 | 60 |
| Val Asp Thr Ser Lys Asn Gln Leu Ser Leu Lys Leu Asn Ser Val Thr | | |
| 65 | 70 | 75 80 |
| Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala Arg Pro Thr Ile Tyr Tyr | | |
| | 85 | 90 95 |
| Phe Asp Gly Arg Thr Ser Tyr Tyr Pro Gly Glu Ala Ala Phe Asp Ile | | |
| | 100 | 105 110 |
| Trp Gly Gln Gly Thr Thr Val Thr Val | | |
| | 115 | 120 |
| <210> 215 | | |
| <211> 114 | | |
| <212> PRT | | |
| <213> artificial sequence | | |
| <220> | | |
| <223> cloned antibody | | |
| <400> 215 | | |
| Glu Ser Asp Pro Gly Leu Val Gln Pro Ser Gln Thr Leu Ser Leu Thr | | |
| 1 | 5 | 10 15 |
| Cys Thr Val Ser Gly Gly Ser Leu Arg Ser Asp Asp Tyr Tyr Trp Ser | | |
| | 20 | 25 30 |
| Trp Ile Arg Gln Ser Pro Gly Lys Gly Leu Glu Trp Ile Ala Tyr Ile | | |
| | 35 | 40 45 |
| Ser Tyr Thr Gly Gly Thr Tyr Tyr Asn Pro Ser Leu Lys Ser Arg Val | | |
| | 50 | 55 60 |
| Thr Ile Ser Val Asp Thr Ser Arg Asn Gln Phe Ser Leu Arg Leu Arg | | |
| 65 | 70 | 75 80 |
| Ser Val Thr Ala Ala Asp Ser Ala Val Tyr Phe Cys Ala Ser Thr Thr | | |
| | 85 | 90 95 |
| Ala Val Thr Thr Thr Phe Asp Tyr Trp Gly Arg Gly Thr Leu Val Thr | | |
| | 100 | 105 110 |

Val Ser

<210> 216
<211> 104
<212> PRT
<213> artificial sequence

<220>
<223> cloned antibody

<400> 216

Pro Val Gln Pro Leu Glu Phe Thr Phe Thr Asp His Trp Met His Trp
1 5 10 15

Val Arg Gln Ala Pro Gly Lys Gly Leu Val Trp Leu Ala Arg Ile Asn
20 25 30

Arg Asp Gly Ser Asp Thr Thr Tyr Ala Asp Ser Val Thr Gly Arg Phe
35 40 45

Thr Ile Ser Arg Asp Asn Gly Lys Asn Thr Val Ser Leu Gln Met Asp
50 55 60

Ser Leu Ser Val Asp Asp Thr Ala Val Tyr Tyr Cys Ala Arg Gly Gly
65 70 75 80

His His Thr Val Leu Ser Pro Leu Ser Asn Trp Phe Asp Pro Trp Gly
85 90 95

Gln Gly Thr Leu Val Thr Val Ser
100

<210> 217
<211> 110
<212> PRT
<213> artificial sequence

<220>
<223> cloned antibody

<400> 217

Glu Ser Glu Gly Gly Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser
1 5 10 15

Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr Ala Met Thr Trp Val

| | | |
|---|-----|-----|
| 20 | 25 | 30 |
| Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ser Thr Met Thr Gly | | |
| 35 | 40 | 45 |
| Ser Gly Gly Val Thr Tyr Tyr Ala Asp Val Leu Lys Gly Arg Phe Thr | | |
| 50 | 55 | 60 |
| Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr Leu Gln Met Asn Ser | | |
| 65 | 70 | 75 |
| Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala Lys Gly Tyr Gly | | |
| 85 | 90 | 95 |
| Leu Phe Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser | | |
| 100 | 105 | 110 |
| <210> 218 | | |
| <211> 115 | | |
| <212> PRT | | |
| <213> artificial sequence | | |
| <220> | | |
| <223> cloned antibody | | |
| <400> 218 | | |
| Leu Ala Gly Val Glu Val Val Gln Pro Gly Gly Ser Leu Arg Leu Ser | | |
| 1 | 5 | 10 |
| Cys Ala Ala Ser Gly Phe Thr Phe Asp Asp Tyr Ala Met His Trp Leu | | |
| 20 | 25 | 30 |
| Arg Gln Ile Pro Gly Lys Gly Leu Gln Trp Val Ser Leu Leu Ser Trp | | |
| 35 | 40 | 45 |
| Asp Gly Val Ser Ala Tyr Tyr Ala Asp Ser Val Glu Gly Arg Phe Thr | | |
| 50 | 55 | 60 |
| Ile Ser Arg Asp Asn Lys Lys Asn Ser Leu Tyr Leu Gln Met Asn Ser | | |
| 65 | 70 | 75 |
| Leu Arg Ala Glu Asp Val Ala Leu Tyr Tyr Cys Ala Lys Asp Met Gly | | |
| 85 | 90 | 95 |

Gly Ala Gln Arg Leu Pro Asp His Trp Gly Gln Gly Thr Leu Val Thr
100 105 110

Val Ser Ser
115

<210> 219
<211> 114
<212> PRT
<213> artificial sequence

<220>
<223> cloned antibody

<400> 219

Gly Gly Gly Leu Val Gln Pro Gly Ala Ser Val Lys Val Ser Cys Lys
1 5 10 15

Ala Ser Gly Tyr Thr Phe Ser Asp Tyr Phe Met His Cys Val Arg Gln
20 25 30

Ala Pro Gly Gln Gly Leu Glu Trp Met Gly Leu Val Asn Pro Thr Asn
35 40 45

Gly Tyr Thr Ala Tyr Ala Pro Lys Phe Gln Gly Arg Val Thr Met Thr
50 55 60

Arg Gln Arg Phe Thr Ser Thr Val Tyr Met Glu Leu Ser Ser Leu Arg
65 70 75 80

Ser Glu Asp Thr Ala Val Tyr Phe Cys Ala Arg Val Lys Ser Ser Asp
85 90 95

Ser Ile Asp Ala Phe Asp Ile Trp Gly Gln Gly Thr Met Val Thr Val
100 105 110

Ser Ser

<210> 220
<211> 103
<212> PRT
<213> artificial sequence

<220>
<223> cloned antibody

<400> 220

Arg Cys Pro Ala Lys Leu Leu Asp Thr Pro Phe Ser Val Tyr Phe Met
1 5 10 15

His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met Gly Leu
20 25 30

Val Asn Pro Thr Asn Gly Tyr Thr Ala Tyr Ala Pro Lys Phe Gln Gly
35 40 45

Arg Val Thr Met Thr Arg Gln Arg Phe Thr Ser Thr Val Tyr Met Glu
50 55 60

Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Phe Cys Ala Arg
65 70 75 80

Val Lys Ser Ser Asp Ser Ile Asp Ala Phe Asp Ile Trp Gly Gln Gly
85 90 95

Thr Met Val Thr Val Ser Ser
100

<210> 221

<211> 103

<212> PRT

<213> artificial sequence

<220>

<223> cloned antibody

<400> 221

Arg Cys Pro Ala Lys Leu Leu Asp Thr Pro Ser Gly Asp Tyr Phe Met
1 5 10 15

His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met Gly Leu
20 25 30

Val Asn Pro Thr Asn Gly Tyr Thr Ala Tyr Ala Pro Lys Phe Gln Gly
35 40 45

Arg Val Thr Met Thr Arg Gln Arg Phe Thr Ser Thr Val Tyr Met Glu
50 55 60

Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Phe Cys Ala Arg
65 70 75 80

Val Lys Ser Ser Asp Ser Ile Asp Ala Phe Asp Ile Trp Gly Gln Gly
85 90 95

Thr Met Val Thr Val Ser Ser
100

<210> 222
<211> 115
<212> PRT
<213> artificial sequence

<220>
<223> cloned antibody

<400> 222

Ser Gly Gly Leu Val Gln Arg Gly Ala Lys Val Leu Arg Leu Ser Cys
1 5 10 15

Val Ala Ser Gly Phe Thr Phe Ser Ser Ser Ala Met Ser Trp Val Arg
20 25 30

Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ser Val Ile Ser Gly Asn
35 40 45

Gly Phe Ser Thr Tyr Tyr Ala Asp Ser Val Lys Arg Phe Thr Ile Ser
50 55 60

Arg Asp Asn Ser Lys Asn Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg
65 70 75 80

Ala Glu Asp Thr Ala Glu Tyr Tyr Cys Thr Lys Val Lys Tyr Gly Ser
85 90 95

Gly Ser His Phe Trp Phe Asp Pro Trp Gly Gln Gly Thr Leu Val Thr
100 105 110

Val Ser Ser
115

<210> 223
<211> 83
<212> PRT

<213> artificial sequence

<220>

<223> cloned antibody

<220>

<221> MISC_FEATURE

<222> (23)..(23)

<223> Xaa is unknown

<220>

<221> MISC_FEATURE

<222> (29)..(29)

<223> Xaa is unknown

<220>

<221> MISC_FEATURE

<222> (52)..(52)

<223> Xaa is unknown

<220>

<221> MISC_FEATURE

<222> (76)..(76)

<223> Xaa is unknown

<400> 223

Leu Gly Ser Pro Tyr Ser Ser Ser Ala Met Ser Trp Val Arg Gln Ala
1 5 10 15

Pro Gly Lys Gly Leu Glu Xaa Val Ser Phe Ile Ser Xaa Asn Gly Leu
20 25 30

Ser Ala Tyr Tyr Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg
35 40 45

Asp Asn Ser Xaa Asn Thr Val Tyr Leu Gln Met Asn Ser Leu Arg Ser
50 55 60

Glu Asp Thr Ala Glu Tyr Tyr Cys Val Lys Val Xaa Tyr Gly Ser Arg
65 70 75 80

Ser His Phe

<210> 224

<211> 115

<212> PRT

<213> artificial sequence

<220>

<223> cloned antibody

<400> 224

Val Glu Ser Gly Gly Val Val Gln Pro Gly Ala Lys Val Leu Arg Leu
1 5 10 15

Ser Cys Ala Ala Ser Gly Phe Ser Phe Glu Asp Tyr Ala Met His Trp
20 25 30

Val Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Val Ala Leu Ile Ser
35 40 45

Trp Asp Val Ile Ser Ala Tyr Tyr Ala Asp Ser Val Lys Gly Arg Phe
50 55 60

Thr Ile Ser Arg Asp Asn Ser Lys Asn Ser Leu Tyr Leu Gln Met Asp
65 70 75 80

Ser Leu Arg Pro Glu Asp Ser Gly Leu Tyr Tyr Cys Gly Arg Asp Ile
85 90 95

Gly Gln Gln Arg Thr Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr
100 105 110

Val Ser Ser
115

<210> 225

<211> 98

<212> PRT

<213> artificial sequence

<220>

<223> cloned antibody

<400> 225

Ala Ala Ser Gly Phe Ile Phe Asp Asp Phe Ala Met His Trp Phe Gln
1 5 10 15

Ala Val Pro Gly Lys Gly Leu Gln Trp Val Gly Leu Met Ser Trp Asp
20 25 30

Gly Val Ser Ala Tyr Tyr Ala Asp Ser Val Glu Gly Arg Phe Thr Ile
35 40 45

Ser Arg Asp Asn Lys Lys Asn Ala Leu Tyr Leu Gln Met Asn Ser Leu
50 55 60

Gly Val Glu Asp Thr Ala Leu Tyr Phe Cys Ala Lys Asp Met Gly Gly
65 70 75 80

Gly Leu Arg Phe Pro His Phe Trp Gly Gln Gly Thr Pro Val Thr Val
85 90 95

Ser Ala

<210> 226
<211> 111
<212> PRT
<213> artificial sequence

<220>
<223> cloned antibody

<400> 226

Phe Trp Leu Gly Gly Pro Trp Arg Leu Ser Cys Ala Val Ser Gly Tyr
1 5 10 15

Thr Leu Ser Ser Ser Ala Met Ile Trp Val Arg Gln Pro Pro Gly Lys
20 25 30

Gly Leu Glu Phe Val Ser Val Ile Ser Gly Asn Gly Leu Ser Ala Tyr
35 40 45

Tyr Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser
50 55 60

Lys Asn Thr Val Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr
65 70 75 80

Ala Glu Tyr Tyr Cys Val Lys Val Lys Tyr Gly Ser Arg Ser His Phe
85 90 95

Phe Phe Asp Ser Trp Gly Gln Gly Thr Leu Val Ser Val Ser Pro
100 105 110

<210> 227

<211> 115
<212> PRT
<213> artificial sequence

<220>
<223> cloned antibody

<400> 227

Gly Gly Gly Leu Val Gln Pro Gly Ala Ser Leu Arg Leu Ser Cys Val
1 5 10 15

Ala Ser Gly Phe Thr Leu Ser Ser Ser Ala Met Ser Cys Val Arg Gln
20 25 30

Ala Pro Gly Lys Gly Leu Glu Trp Val Ser Val Ser Ser Gly Asn Gly
35 40 45

Phe Ser Ala Tyr Tyr Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser
50 55 60

Arg Asp Asn Ser Lys Asn Thr Leu Tyr Leu Gln Met Asn Ser Leu Val
65 70 75 80

Ala Glu Asp Thr Ala Glu Tyr Tyr Cys Thr Lys Val Asn Tyr Gly Ser
85 90 95

Arg Ser His Phe Tyr Phe Gly Ser Trp Gly His Gly Thr Leu Val Ile
100 105 110

Val Ser Ser
115

<210> 228
<211> 114
<212> PRT
<213> artificial sequence

<220>
<223> cloned antibody

<400> 228

Trp Gly Arg Arg Gly Pro Ala Trp Gly Val Pro Val Gly Ser Pro Val
1 5 10 15

Gln Pro Leu Gly Tyr Thr Phe Asp Asp Tyr Ala Met His Trp Leu Arg
20 25 30

Gln Ile Pro Gly Lys Gly Leu Gln Trp Val Ser Leu Leu Ser Trp Asp
 35 40 45

Gly Val Ser Ala Tyr Tyr Ala Asp Ser Val Glu Gly Arg Phe Thr Ile
 50 55 60

Ser Arg Asp Asn Lys Lys Asn Ser Leu Tyr Leu Gln Met Asn Ser Leu
 65 70 75 80

Val Ala Glu Asp Thr Ala Leu Tyr Phe Cys Ala Lys Asp Met Gly Gly
 85 90 95

Ala Gln Arg Leu Pro Asp His Trp Gly Gln Gly Thr Leu Val Thr Val
 100 105 110

Ser Ser

<210> 229
 <211> 115
 <212> PRT
 <213> artificial sequence

<220>
 <223> cloned antibody

<220>
 <221> MISC_FEATURE
 <222> (70)..(70)
 <223> Xaa is unknown

<400> 229

Trp Thr Gly Gly Gly Val Val Gln Pro Gly Gly Ser Leu Arg Val Ser
 1 5 10 15

Val Ala Ala Ser Gly Tyr Thr Phe Asp Asp Tyr Ala Met His Trp Leu
 20 25 30

Arg Gln Ile Pro Gly Lys Gly Leu Gln Trp Val Ser Leu Leu Ser Trp
 35 40 45

Asp Gly Val Ser Ala Tyr Tyr Ala Asp Ser Val Glu Gly Arg Phe Thr
 50 55 60

Ile Ser Arg Asp Asn Xaa Lys Asn Ser Leu Tyr Leu Gln Met Asn Ser
65 70 75 80

Leu Ile Ala Glu Asp Thr Ala Leu Tyr Phe Cys Ala Lys Asp Met Gly
85 90 95

Gly Ala Gln Arg Leu Pro Asp His Trp Gly Gln Gly Thr Leu Val Thr
100 105 110

Val Ser Ser
115

<210> 230
<211> 120
<212> PRT
<213> artificial sequence

<220>
<223> cloned antibody

<400> 230

Ala Glu Ser Gly Gly Gly Val Val Gln Pro Gly Gly Ser Leu Arg Leu
1 5 10 15

Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Arg Tyr Thr Leu Ser Trp
20 25 30

Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ser Tyr Ile Ser
35 40 45

Thr Asp Gly Ser Thr Ile Tyr Tyr Thr Asp Ser Val Lys Gly Arg Phe
50 55 60

Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Ser Leu Gln Met Ile
65 70 75 80

Ser Leu Arg Asp Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg Val Phe
85 90 95

Phe Gly Gly Asn Phe Arg Ala His Trp Tyr Phe Asp Leu Trp Gly Arg
100 105 110

Gly Thr Leu Val Ala Val Ser Ser
115 120

<210> 231
<211> 47
<212> DNA
<213> artificial sequence

<220>
<223> primer

<400> 231
agaatttgac tagttggcaa gaggcacgtt cttttctttg ttgccgt

47